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(54) **MULTI-TOUCHSCREEN MODULE FOR AMUSEMENT DEVICE**

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G07F 17/32	(2006.01)
G06F 3/0488	(2013.01)

(52) **U.S. Cl.**

CPC ***G07F 17/3211*** (2013.01); ***G06F 3/0488*** (2013.01); ***G06F 3/04886*** (2013.01); ***G07F 17/3209*** (2013.01); *G06F 2203/04803* (2013.01); *G06F 2203/04808* (2013.01)

(58) **Field of Classification Search**

None

See application file for complete search history.

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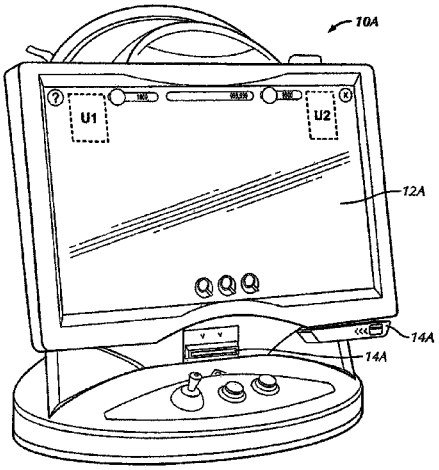
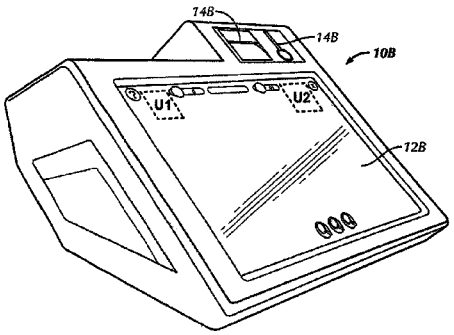
(57) **ABSTRACT**

An amusement device includes a display screen having a touchscreen. The touchscreen is configured to receive a plurality of touch inputs simultaneously. A memory stores a plurality of electronic games for selection and play. A controller is configured to generally simultaneously execute a first game and a second game from the plurality of electronic games. The first game is configured to display at least one first image on a first portion of the display screen, and the second game is configured to display at least one second image on a second portion of the display screen. The first and second games are simultaneously playable in an interactive manner, such that an action undertaken in playing of the first game modifies the second game.

4 Claims, 5 Drawing Sheets





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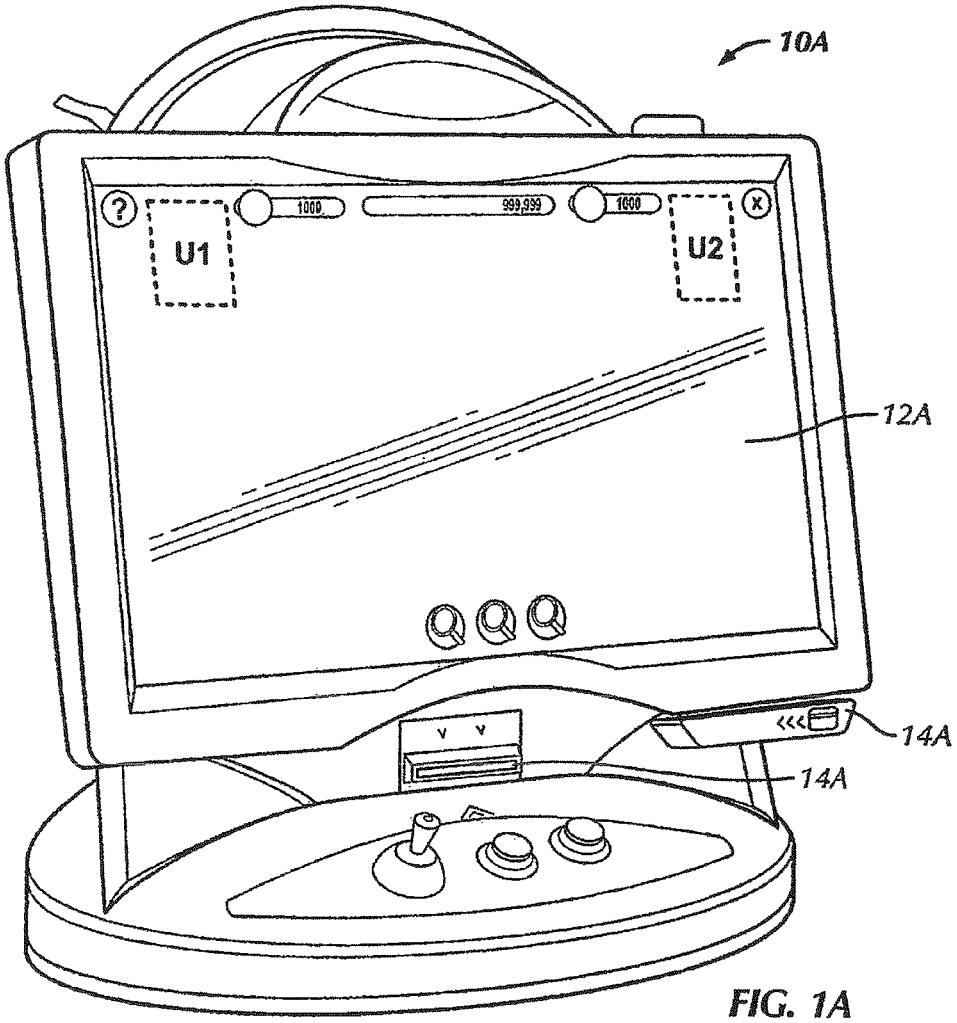

FIG. 1A

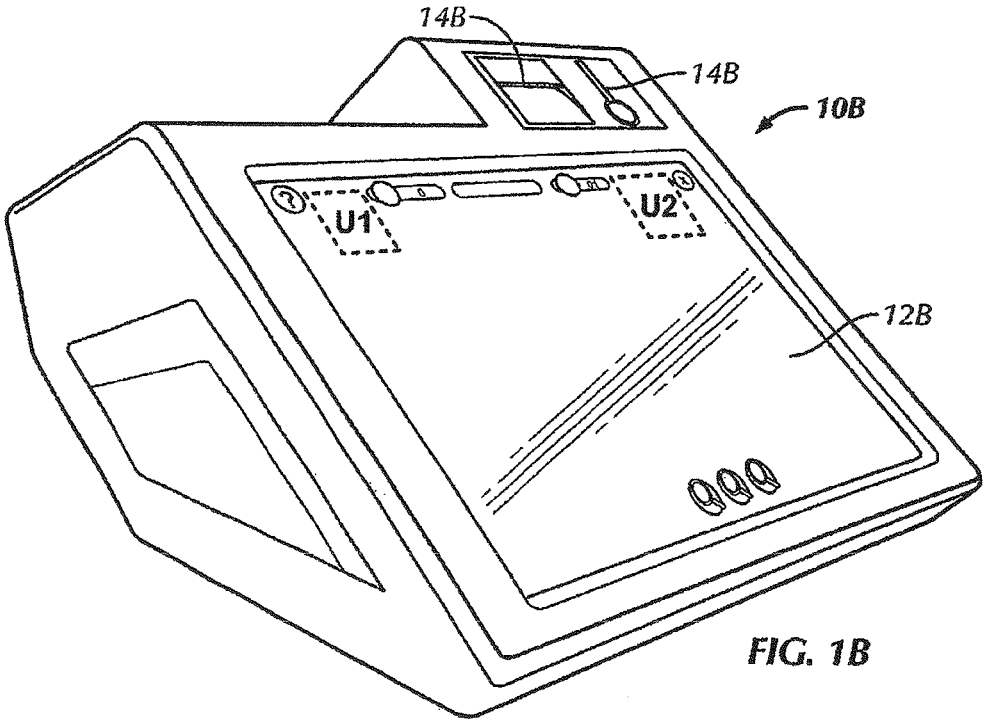

FIG. 1B

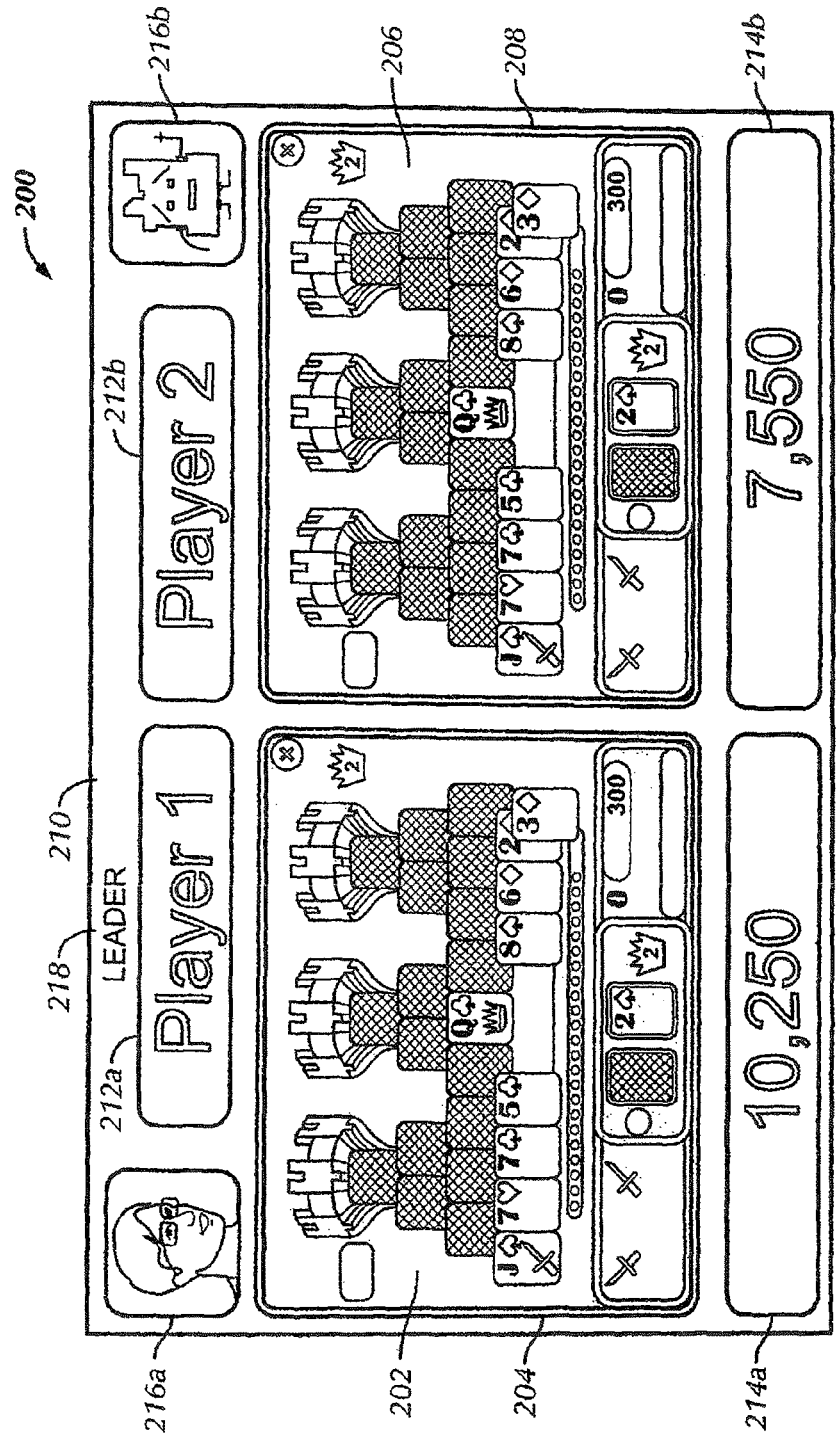
200
210
218
LEADER
212a
Player 1
212b
Player 2
216b
206
208
214b
7,550
10,250
216a
202
204
214a

FIG. 2

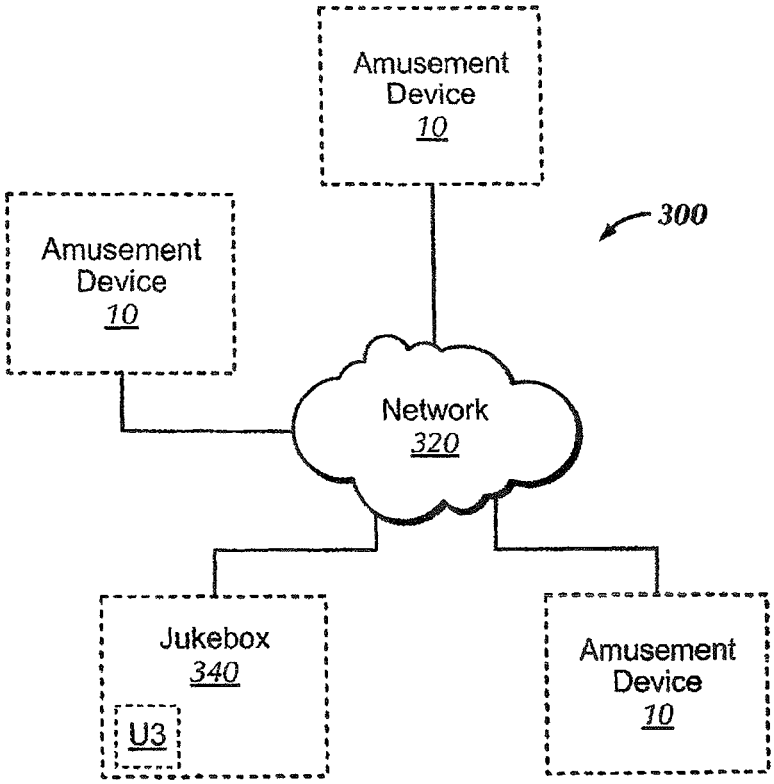
Amusement Device 10
300
Amusement Device 10
Network 320
Jukebox 340
U3
Amusement Device 10

FIG. 3

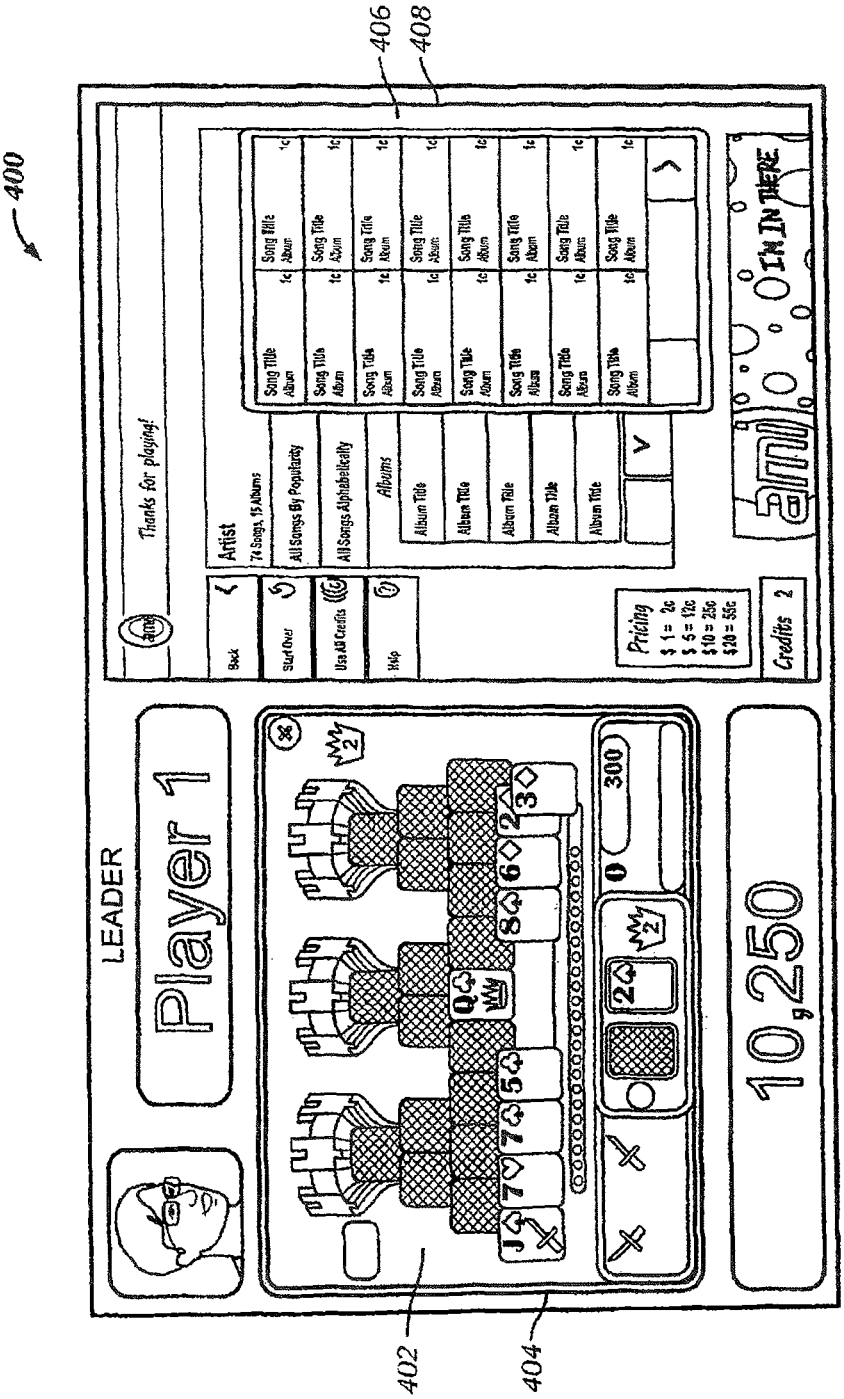
400
406
408
Thanks for playing!
Artist
74 Songs, 15 Albums
All Songs By Popularity
All Songs Alphabetically
Albums
Album Title
Song Title
Album
Back
Start Over
Use All Credits
Help
Pricing
$ 1 = 2c
$ 5 = 10c
$ 10 = 25c
$20 = 55c
Credits 2
LEADER
Player 1
300
10,250
402
404

FIG. 4

MULTI-TOUCHSCREEN MODULE FOR AMUSEMENT DEVICE

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a continuation-in-part of U.S. application Ser. No. 13/211,862, filed on Aug. 17, 2011, currently pending, entitled "Multi-Touchscreen Module for Amusement Device," which is a continuation of U.S. application Ser. No. 12/940,527, filed on Nov. 5, 2010, now U.S. Pat. No. 8,118,680, entitled "Multi-Touchscreen Module for Amusement Device," the entire contents of both of which are incorporated by reference herein and both of which claim the benefit of U.S. Provisional Patent Application No. 61/293,429, filed on Jan. 8, 2010, entitled "Multi-Touchscreen Module for Amusement Device."

BACKGROUND OF THE INVENTION

An embodiment of the present invention relates generally to an amusement device, and more particularly, to an amusement device with a touchscreen configured to accept, generally simultaneously, a plurality of touch inputs.

Amusement devices having electronic games for computers and touchscreens or other types of amusement devices are generally well known in the art. Amusement devices, such as game machines, which allow a user to select games from a video display are well known in the art, such as those disclosed in U.S. Pat. No. 4,856,787 ("Itkis"); U.S. Pat. No. 5,575,717 ("Houriet, Jr., et al."); and U.S. Pat. No. 5,743,799 ("Houriet, Jr., et al."), the entire contents which are incorporated herein by reference and each of which shows a touchscreen for making a game selection from a menu of games. Such game machines or amusement devices typically operate upon input of currency (i.e., coin, token, paper money, credit/debit cards or the like) and are installed in locations such as bars, restaurants, airports, shopping malls, video arcades, casinos or the like. The game choices may include card games, sports games, games of skill, games of chance, action games, trivia games, or the like.

Generally prior art games with touchscreen displays allow for only one touch input at a time. Thus, prior art devices do not allow for simultaneous multi-player functionality. Players must alternate turns in order to compete or play a game cooperatively. Further, many games are designed for single players only.

It is therefore desirable to provide an amusement device that is configured to enable simultaneous multi-player functionality. It is further desirable to provide such a device that is capable of allowing multi-player functionality using single player games while minimizing the need to alter programming code.

BRIEF SUMMARY OF THE INVENTION

Briefly stated, an embodiment of the present invention is directed to an amusement device including a display screen having a touchscreen. The touchscreen is configured to receive a plurality of touch inputs simultaneously. A memory stores a plurality of electronic games for selection and play. A controller is configured to generally simultaneously execute a first game and a second game from the plurality of electronic games. The first game is configured to display at least one first image on a first portion of the display screen. The second game is configured to display at least one second image on a second portion of the display screen. The first and second games are simultaneously playable in an interactive manner, such that an action undertaken in playing of the first game modifies the second game.

Another preferred embodiment is directed to an amusement device including a display screen having a touchscreen. The touchscreen is configured to receive a plurality of touch inputs simultaneously. A memory stores a plurality of electronic games for selection and play. A controller is configured to generally simultaneously execute a first game and a second game from the plurality of electronic games. The first game is configured to display at least one first image for a first player using a first portion of the display screen. The second game is configured to display at least one second image for a second player using a second portion of the display screen. The first and second games are simultaneously playable. At least one of the first and second games is configured to be remotely played by one of the first and second players.

BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing summary, as well as the following detailed description of preferred embodiments of the invention, will be better understood when read in conjunction with the appended drawings. For the purpose of illustration, there are shown in the drawings embodiments which are presently preferred. It should be understood, however, that the invention is not limited to the precise arrangements and instrumentalities shown.

FIG. **1**A is a perspective view of an amusement device in accordance with a first preferred embodiment of the present invention;

FIG. **1**B is a perspective view of an amusement device in accordance with a second preferred embodiment of the present invention;

FIG. **2** is a screenshot from an amusement device in accordance with a third preferred embodiment of the present invention;

FIG. **3** is a schematic block diagram of an amusement device network in accordance with a fourth embodiment of the present invention; and

FIG. **4** is a screenshot from an amusement device in accordance with the fourth preferred embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

Certain terminology is used in the following description for convenience only and is not limiting. The words "a" and "an", as used in the claims and in the corresponding portions of the specification, mean "at least one." Further, the terms "coin" or "currency" should not be construed as limiting and can be used herein to mean all forms of coin and paper currency from any country as well as proprietary tokens, game cards, credit cards, debit cards, chits, or other representative forms of credit and/or payment.

Referring to the drawings in detail, wherein like reference numerals indicate like elements throughout, there is shown in FIG. **1**A a first preferred embodiment of an amusement device **10**A. The amusement device **10**A includes a controller U**1** and a memory U**2**. The controller U**1** may be a single microprocessor, multiple processors, or the like. The memory U**2** can be any known or suitable memory device such as random access memory (RAM), read only memory (ROM), flash RAM, hard disk, optical disk, or the like. The amusement device **10**A further includes a video display **12**A that is operatively connected to the controller U**1**. The amusement device **10**A also includes at least one input component **14**A

that receives value in order to establish one or more playable credits. The value received may be at least one of currency, coins, tokens, chits, credits, credit cards/debit cards or the like. Although only one input component **14**A is shown, the amusement device **10**A may include more than one input component **14**A to give a user an option for payment, for permitting multiple players, or the like. Preferably, the amusement device **10**A is made operable upon actuation of the input component **14**A, for example, the user may only select and play an electronic game once value is received at the input component **14**A and/or one or more playable credits are issued to the user. However, free selections may be offered at the discretion of an operator of the amusement device **10**A.

FIG. **1**B shows another or second amusement device **10**B in accordance with a second preferred embodiment of the present invention. The second amusement device **10**B also includes a controller U**1**, a memory U**2**, a display **12**B, and an input component **14**B. Preferably, the video displays **12**A, **12**B are touchscreen video displays configured to accept touch input. The first amusement device **10**A is a free-standing apparatus, whereas the second amusement device **10**B is a table-top or counter-top apparatus. However, the amusement devices **10**A, **10**B may be arranged in any configuration including table mount, wall mount, pole mount, and the like without departing from the invention.

For convenience, the amusement devices **10**A, **10**B will be referred to hereinafter simply as "amusement device **10**."

Turning now to the operation of the amusement device **10**, the memory U**2** stores one or more applications or application programs, such as electronic games, a music or video jukebox program, or the like, and a system control program. However, the one or more application programs may also be stored remotely. Preferably, the memory U**2** stores a plurality of electronic games that may be selected and played by one or more players. The controller U**1** controls the touchscreen display **12** based upon the system control program retrieved from the memory U**2** and based upon inputs from the touchscreen display **12**. As used herein, the system control program refers to all of the software that functions outside of the application program files including an operating system, display control, input control, sound drivers, and the like. Other input devices which may be connected to the amusement device **10** include a pushbutton(s), a trackball or touchpad, a mouse, a joy-stick, a foot-pedal, a voice recognition system, a keypad or keyboard, and the like. But, preferably, the input device is the touchscreen display **12**.

The amusement device **10** includes an operating mode and a setup mode. When the operating mode is selected, a player or user is selectively permitted to access the application programs. When the setup mode is selected, the owner/operator is permitted to make system setup adjustments. To switch from the operating mode to the setup mode, a mode selector pushbutton (hardware not shown) is provided that is typically concealed from the users. The mode selector pushbutton may be implemented as a hidden software feature, but preferably the mode selector pushbutton is a simple pushbutton that is disposed inside a housing of the amusement device **10**. In the setup mode, the owner/operator may also make adjustments to the game features as will be described in greater detail hereinafter.

In the preferred embodiments of the present invention, the controller U**1** controls the display **12** based upon the system control program retrieved from the memory U**2** and based upon inputs of the user. The display **12** preferably has a "widescreen" aspect ratio. Such ratios may include, for example, 16:9, 16:10, 1.85:1, 2.35:1, or the like. The touchscreen display **12** is also preferably configured to receive a plurality of touch inputs simultaneously, i.e., one or more users may touch the display **12** in multiple locations simultaneously and have the data associated with each of the touches be accepted. The touchscreen display **12** is therefore of the projected capacitive type, infrared, ultrasonic, or the like for supporting multi-touch input.

FIG. **2** is a screenshot **200** from an amusement device **10** in accordance with a preferred embodiment of the present invention. The controller U**1** is configured to simultaneously or generally simultaneously execute a first game and a second game from the plurality of electronic games stored in the memory U**2**. By the term "generally simultaneously," it will be understood that the controller is configured to execute the first game and the second game at the same time, with no humanly perceptible delay occurring between the execution of the first game and the execution of the second game. However, one skilled in the art would understand that a brief humanly perceptible delay may occur between the execution of the first game and the execution of the second game, as long as the first and second games may effectively be played simultaneously.

The first game is configured to display at least one image **202** on a first portion **204** of the display screen **12**. The second game is configured to display at least one image **206** on a second portion **208** of the display screen **12**. The first and second games are, in one embodiment, preferably the same game selected from the plurality of electronic games, thus permitting multiple users to compete or play cooperatively. Where the first game and second game are the same game, multiple instances of the same game will be displayed on the display screen **12**. However, the first and second games may also be different games, enabling competitive or cooperative play between games. Although two games are shown in FIG. **2** as being executed and playable simultaneously, any number of games may be executed and playable by the controller U**1**, dependent mostly upon the size of the display screen **12**. It will further be understood by one skilled in the art that the controller may execute at least one additional game generally simultaneously with the first and second games, where each additional game is configured to display at least one image on a respective additional portion of the display screen **12**.

The first game is playable by a first player **212***a* to attain a first score **214***a*, and the second game is playable by a second player **212***b* to attain a second score **214***b*. In one embodiment, both players **212***a*, **212***b* are present at the physical location of the amusement device **10** and thus both players **212***a*, **212***b* play the game locally. In another embodiment, either or both of the first and second players **212***a*, **212***b* may remotely interact with the amusement device **10**. That is, one or both of the players **212***a*, **212***b* may be located remotely from the local amusement device **10**, but are still able to remotely select and play a game using another remote amusement device **10** or a remote computer device (not shown) operatively in communication with the local amusement device **10**.

Preferably, the remote player plays the game on the local amusement device **10** using a remote amusement device **10** which is in communication with the local amusement device **10** and which is configured to display at least one image **202** from the first game and at least one image **206** from the second game. Thus, both the local and remote players can observe the game images **202**, **206**, as well as their own and each other's game play actions, on their respective amusement devices **10**.

In another embodiment, the remote player may play the game using a mobile or computer device connected to the internet and in communication with the local amusement

device **10**. In such cases, the player who is playing the game locally can observe the images **202**, **206** and game play of both the first and second games on the local amusement device **10**, while the remote computer device will not have the capability to display both images **202**, **206**. Thus, the remote player may, at times, be at a disadvantage. Accordingly, in order to level the playing field, the controller U**1** of the local amusement device **10** preferably implements controls to ensure that the local player can only observe the actions being undertaken for the game which he or she is playing and to prevent the local player from observing some or all of the game play of the remote player. For example, the local player may only be able to observe a still image of the game being played by the remote player, where the still image does not reveal the actions being undertaken by the remote player for game play. Alternatively, the local player may only be able to observe selected game play actions of the remote player.

Such limiting controls may also be implemented in situations where the local and remote players are playing the game on local and remote amusement devices **10**, but the game is one that requires a degree of secrecy for fair play. For example, where the game being played is a card game, such as poker, the local and remote players should not be allowed to see the hand dealt to the other player. In such cases, the controller U**1** of the local amusement device **10** and/or the remote amusement device **10** preferably implements controls to ensure that both the local and remote players can only observe his or her own game play actions and game image **202**, **206**. Alternatively, the controller(s) U**1** may implement controls to limit both the local and remote players to observing only selected game play actions of the other player.

In competitive play, the controller U**1** may be configured to compare the first score **214***a* and the second score **214***b* to, for example, determine a winner **218** between the first and second players **212***a*, **212***b*. In cooperative play, the controller U**1** may be configured to store one of the first and second scores **214***a*, **214***b* as a best cooperative score (e.g., lowest score for golf or highest score for bowling, or the like). Alternatively, the first and second scores **214***a*, **214***b* may be summed by the controller U**1** and stored as a cumulative cooperative score.

In one embodiment, the controller U**1** is configured to execute the first and second games in a shared virtual environment, such that the first and second players **212***a*, **212***b* simultaneously play the first and second games in an interactive manner. Preferably, while the first player **212***a* is playing the first game on the first portion **204** of the display screen **12** and the second player **212***b* is playing the second game on the second portion **208** of the display screen **12**, moves or actions undertaken by the first player **212***a* in playing the first game may modify the second game, and vice versa. As such, the first and second players **212***a*, **212***b* are engaged in interactive game play with each other, such that an action or move undertaken by the first player **212***a* in playing the first game could, in a variety of ways, positively or negatively modify or otherwise impact the second game and, in turn, the game play and strategy of the second player **212***b*, and vice versa. Preferably, the shared virtual environment is implemented when the first and the second game are the same game selected from the plurality of electronic games.

The selected game may include a plurality of play scenarios. Thus, where the first and second game are the same, the first game may present a first one of the plurality of play scenarios to the first player **212***a*, and the second game may present a second one of the plurality of play scenarios to the second player **212***b*. For competitive or cooperative play, the first and second games will preferably present the same play scenario to both players **212***a*, **212***b*. For example, the plurality of play scenarios for a game of solitaire are the plurality of possible deals or "hands" that a player may be presented with. Some hands of solitaire inherently cannot be taken to completion, no matter how skilled the player. A competitive game of solitaire, where the first player **212***a* receives a completable hand and the second player **212***b* does not, presents an unfair advantage to the first player **212***a* because the second player **212***b* can never achieve the highest possible score achievable by the first player **212***a*. Thus, for competitive play, presenting the same hand to both players **212***a*, **212***b* levels the playing field.

The first and second games also preferably present the same play scenario to both players **212***a*, **212***b* for interactive play between the players **212***a*, **212***b*. For example, for interactive play of a puzzle-type game where the same puzzle scenario is presented to both the first and second players **212***a*, **212***b*, if the first player **212***a* utilizes a particular puzzle piece before the second player **212***b* is able to do so, that puzzle piece may no longer be available for use by the second player **212***b*. Thus, the second game and the game play and strategy of the second player **212***b* is negatively impacting by the actions of the first player **212***a*. Where the selected game is a card game and both the first and second players **212***a*, **212***b* are presented with the same hand, if the first player **212***a* discards a card, the discarded card may then become available for use by the second player **212***b*. Similarly, where the selected game is an action-type game, if the first player **212***a* defeats or blocks the attack of a character, that same character may then turn his sights on the second player **212***b* as a result of the defeat by the first player **212***a*. Thus, this type of interactive, head-to-head play forces faster, more frenetic and more strategic game play.

In another embodiment, where the first and second games are the same, the first and second games may present different play scenarios to the first and second player **212***a*, **212***b*, respectively, for interactive, cooperative or competitive play. It will also be understood by those skilled in the art that interactive play between the first and second players **212***a*, **212***b* need not require or result in competitive or hostile interactions. For example, in an action-type game, where the first player **212***a* requires a particular tool or power which the second player **212***b* possesses, the controller U**1** will enable the second player **212***b* to provide that tool or power to the first player **212***a*.

In one embodiment, the controller U**1** is configured to execute an application program that is configured to access the first and second games from the plurality of electronic games stored in the memory U**2**. The application program is also configured to simultaneously or generally simultaneously display the at least one first image **202** on the first portion **204** of the display screen **12** and the at least one second image **206** on the second portion **208** of the display screen **12**. By the term "generally simultaneously," it will be understood that the application program is configured to display the first image **202** and the second image at the same time, with no humanly perceptible delay occurring between displaying of the first image and displaying of the second image. However, one skilled in the art would understand that a brief humanly perceptible delay may occur between displaying of the first image and displaying of the second image, as long as the first and second games may effectively be played simultaneously.

The application program may be a software module, or the like, which operates as a shell to execute the first and second games. Accordingly, single player games or games that do not support simultaneous multi-player functionality may be run

in the shell for simultaneous competitive or cooperative play with minimal or no changes required to the game code itself.

In order to facilitate competitive or cooperative play, the application program is configured to retrieve data from at least one of the first and second games and display the retrieved data on a third portion **210** of the display screen **12**. The retrieved data may be, for example, player names **212***a*, **212***b*, player scores **214***a*, **214***b*, avatars **216***a*, **216***b*, time remaining (not shown), or the like. In competitive play, for example, the application program can use and compare the scores **214***a*, **214***b* retrieved from the first and second games to determine a winner **218** among the players. Specifically, the retrieved data may include the first score **214***a* attained by the first player **212***a* of the first game and the second score **214***b* attained by the second player **212***b* of the second game, and the application program may compare the first and second scores **214***a*, **214***b* to determine a winning score based on the retrieved first and second player scores **214***a*, **214***b*. Similarly, in cooperative play, for example, the application program can use the scores **214***a*, **214***b* retrieved from the first and second games and calculate and store a sum of the first and second scores.

Referring to FIG. **3**, in another embodiment, the amusement device **10** may be a part of a tournament system **300** having a plurality of amusement devices **10**. The tournament system **300** includes a plurality of tournament games playable by a plurality of players. Each tournament game generates a total player score upon completion of play. The player scores are used to determine tournament winners. The tournament games may be stored in the memory U**2** of the amusement device **10**, or may be available for download or on-line play over a network **320**.

Accordingly, two players may simultaneously use the amusement device **10** to compete in a tournament. At least one of the first score **214***a* and the second score **214***b* may be stored for entry into the tournament, particularly during competitive play between the players. For example, the controller U**1** may only accept the score of the winner **218**. In cooperative play, the best score between the first and second players may be selected and stored by the controller U**1** for entry into the tournament as a cooperative score. Alternatively, a sum of the first and second scores **214***a*, **214***b* may be entered into the tournament as a cooperative score among the players.

Embodiments of the present invention are also directed to applications other than simultaneous execution of games. For example, FIG. **4** is a screenshot **400** from an amusement device in accordance with another preferred embodiment. An application program executed by the controller U**1** is configured to access a first game from the plurality of games stored in memory U**2**, and access a jukebox controller U**3** (as shown in FIG. **3**). Alternatively, the jukebox controller U**3** may access the controller U**1** to run the application program. The jukebox controller U**3** is configured to select and play at least one music data set. A music data set preferably includes at least audio data required for playing a song or other audio presentation, and can be an .mp3, .wma, .wav file, or the like. Accordingly, a music data set may also include metadata, i.e., information about the song such as artist, title, album, run time, or the like. A music data set may also be a video file, such as an .mpeg, .wmv, .avi, .mov file, or the like, and thus includes at least video data required for playing a video.

Referring to FIG. **4**, as described above, the application program displays at least one first image **402** from the first game on a first portion **404** of the display screen **12**. Generally simultaneously, the application program displays at least one second image **406** representing a jukebox control interface (for allowing player interaction with the jukebox controller U**3**) on a second portion **408** of the display screen **12**. A player (or players) can thus generally simultaneously apply multiple touch inputs to play a game and select and play music or videos.

The jukebox controller U**3** is shown in FIG. **3** as being located remotely from the amusement device **10**. Specifically, the jukebox controller U**3** may be located within a stand-alone jukebox **340** that outputs its own audio or video, wherein the amusement device **10** is connected to the jukebox **340** over the network **320** or locally (not shown). The jukebox controller U**3** may also be within a server (not shown) that provides audio or video data to the amusement device **10** to broadcast through the audio and/or video output components of the amusement device **10**. Alternatively, the jukebox controller U**3** may also be located at the amusement device **10**. It is also contemplated that the controller U**1** of the amusement device can also function as the jukebox controller U**3**.

As described above, it is further contemplated that more than one game may be simultaneously executed and played along with the jukebox control interface. Further, an application program is not necessarily required by the controller U**1** to perform the simultaneous display of the first game and the jukebox control interface. For example, the controller U**1** may be capable of executing the first game and the jukebox controls generally simultaneously.

The amusement device **10** may also include other functionality and features such as music jukebox, video jukebox, multimedia player, Internet browsing, broadcast media viewing, time based rental mode, non-prize tournaments, prize-based tournaments, head-to-head competitions, prize-based lotteries, ticket dispensing, prize dispensing, debit/credit card charging, phone card dispensing, e-mail, photography, placing customer orders, communicating with other amusement devices, and the like.

The amusement device **10** may also provide for remote or local access for accounting and/or bookkeeping purposes. The amusement device **10** may include a local connector for uploading to a hand-held or portable computer or removable memory for receiving accounting or other data. The amusement device **10** may include accounting and bookkeeping screens accessible by an operator through set up screens and/or through password protection.

It will be appreciated by those skilled in the art that changes could be made to the embodiments described above without departing from the broad inventive concept thereof. It is understood, therefore, that this invention is not limited to the particular embodiments disclosed, but it is intended to cover modifications within the spirit and scope of the present invention as defined by the appended claims.

We claim:

1. An amusement device comprising:

(a) a display screen having a touchscreen, the touchscreen being configured to receive a plurality of touch inputs simultaneously;

(b) a memory that stores a plurality of electronic games for selection and play, each of the plurality of games including a plurality of play scenarios; and

(c) a controller configured to generally simultaneously execute a first game playable by a first player and a second game playable by a second player from the plurality of electronic games, the first player being different from the second player, the first and second games each being single player games, the first game being configured to display at least one first image on a first portion of the display screen and the second game being configured to display at least one second image on a second portion of the display screen, the first and second games

being simultaneously playable by the first and second players in an interactive manner such that an action undertaken in playing of the first game positively or negatively affects an ability of the second player to use a specific game piece in the second game,

wherein the first game and the second game are the same game selected from the plurality of electronic games, and the first and second games present the same play scenario selected from the plurality of play scenarios.

2. The amusement device of claim **1**, wherein an action undertaken in playing of the second game positively or negatively affects an ability of the first player to use a specific game piece in the first game.

3. The amusement device of claim **1**, wherein the first and second games are puzzle games, the specific game piece is a specific puzzle piece, and the action undertaken in the first game is the use of the specific puzzle piece, which prevents the second player from using the specific puzzle piece in the second game.

4. The amusement device of claim **1**, wherein the first and second games are card games, the specific game piece is a specific card, and the action undertaken in the first game is the discarding of the specific card, which makes the specific card available for use by the second player in the second game.

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